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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/617,086	07/14/2000	Masahiro Tsujishita	649-753P	5579
2292	7590	05/15/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			LAO, LUN S	
			ART UNIT	PAPER NUMBER
			2615	

DATE MAILED: 05/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/617,086	Applicant(s) TSUJISHITA ET AL.	
	Examiner Lun-See Lao	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Introduction

1. This is in response to the amendment filed on 02-09-2006. Claims 1 and 8 have been amended and claim 6 has been cancelled. Claims 1-5 and 7-21 are pending.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02-09-2006 has been entered.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-5 and 7-21 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 of US Patent (US PAT. 6,690,805). Although the conflicting claims are not identical, they are not patentably distinct from each other.

Consider claims, 1, 8 and 13 substantially all the claimed steps in these claims were recited in claim 1 of the patent identified above, such as the steps of : “ a noise reduction apparatus comprising:

- a noise detector detecting a noise included in a demodulated audio signal;
- a first corrector outputting a correction signal for correcting the noise according to a signal value existing just before and just after a predetermined period including a generation time point of the noise in the demodulated audio signal which is detected by said noise detector, a second corrector outputting the correction signal for correcting the noise according to at least one of: one or more values of the demodulated audio signal which occur before the generation period of the noise which is detected by said noise detector, and one or more values of the demodulated audio signal which occur after the

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generation period; a high band level detector detecting the level of a high band component of the demodulated audio signal; and a selector selecting either one of said first or said second correctors according to the output of said high band level detector" (see US PAT. 6,690,805, claims 1-3, col. 27 line 21-col. 30 line 39).

Because claims 1-21 of US patent application 09/617,086 are similar in scope to claims 1-13 of the US patent (US PAT. 6,774,934) with obvious wording variation, there are both describing an audio signal noise reduction system assemblies supported by first corrector (filter) and second corrector (filter). Claims 1, 8 and 13 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent (US PAT. 6,774,934). Although the conflicting claims are not identical, they are not patentably distinct from each other because both inventions relates to noise reduction. Regarding claim 1, US PAT. 6,774,934 discloses audio signal noise reduction system comprising: noise detecting means, first filter means and second filter means....., therein as claimed.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 8-11 rejected under 35 U.S.C. 102(b) as being anticipated by Tsuji (JP 11-186924).

Consider claim 8, Tsuji teaches that a noise removal apparatus comprising:

a noise detector (see fig.10, 20) detecting the noise included in a demodulation signal having the information corresponding to audio signals of a plurality of channels (such as left and right channels) from the demodulation signals each of the audio signals corresponding to a respective one of the plurality of channels; an audio signal demodulator (1) demodulating and outputting the audio signals corresponding to each of the plurality of channels from the information corresponding to the audio signals included in the demodulation signals, and a corrector (14) independently correcting the detected noise in each audio signal which is outputted from said audio signal demodulator according to the output of said noise detector (see detail disruption page 5 [0026]-[0028] and fig. 10 (20)).

Consider claim 9. Tsuji et al. teaches that the noise removal apparatus of said noise detector (see fig.10,20) conducts the noise detection such that, for each predetermined period which alternates among a plurality of channels, a portion of the period respectively overlaps with each other (see detail disruption page 5 [0024]-[0030] and figs 8-12).

Consider claims 10-11. Tsuji teaches that the noise removal apparatus of the output of said noise detector (see fig.10, 20), a generation condition of the noise is detected,

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and corresponding to the detected result, the detection sensitivity of said noise detector (20) is controlled (see detail disruption page 5 [0026]-[0028] and fig. 10 (20)); and an audio output apparatus including said noise removal apparatus (see detail disruption page 5 [0026]-[0028] and fig. 10).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-3, 5, 7 and 12-18, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji (JP 11-186924) in view of Tanaka (US PAT. 5,715,351).

Consider claim 1. Tsuji teaches that a noise reduction apparatus comprising:

a noise detector (see fig. 10 (20)) detecting a noise included in a demodulated audio signal;

a first corrector (see fig.10 (14)) outputting a correction signal for correcting the noise according to a signal value existing just before and just after a predetermined period including a generation time point of the noise in the demodulated audio signal which is detected by said noise detector (20 and see detail disruption page 5 [0024]-[0030] and figs 8-12),

a second corrector (23) outputting the correction signal for correcting the noise

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according to at least one of: one or more values of the demodulated audio signal which occur before the generation period of the noise which is detected by said noise detector (20), and one or more values of the demodulated audio signal which occur after the generation period (see detail disruption page 5 [0024]-[0030] and figs 8-12);

a high band level detector (23) detecting the level of a high band component of the demodulated audio signal (see detail disruption page 5 [0024]-[0030] and figs 8-12); and a selector (see fig.10, (24 and fig. 14)) selecting either one of said first or said second correctors (23 and see detail disruption page 6 [0033]); but Tsuji does not clearly teach a selector selecting either one of said first or said second correctors according to the output of said high band level detector.

However, Tanaka teaches a selector (30, 43) selecting either one of said first (41,46) or said second (40,45) correctors according to the output of said high band level detector (42 and see col.4 line 55-col.5 line 22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Tanaka in to Tsuji to provide a first and second switch means for switching an input signal and an output signal in response to the high bank detection signal to improve the output sound.

Consider claim 13, the method limitations as recited in the claim correspond to apparatus claim 1. See previous apparatus claim 1 rejection.

Consider claim 2, Tsuji teaches that the noise removal apparatus of said first corrector (see fig.10, (14)) outputs a low pass filter (13) output of a signal value obtained from a linear interpolation of 2 signal values existing just before and just after a

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predetermined period including a generation time point of the noise, as a correction signal (see detail disruption page 5 [0024]-[0030] and figs 8-12).

Consider claim 3 Tsuji teaches that the noise removal apparatus of said second corrector outputs a high region interpolation circuit (see fig.10, 23) output of the signal value obtained from the linear interpolation of 2 average signal values obtained by averaging a plurality of signal values existing before and after a predetermined period including the generation time point of the noise, corresponding to each of before and after the generation of the noise, as a correction signal (see detail disruption page 5 [0024]-[0030] and figs 8-12); but Tsuji does not clearly teach a second corrector outputs a low pass filter out.

However, Tanaka teaches a second corrector outputs a low pass filter out (see fig.3 46 and col. 4 line 55-col. 5 line 21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Tanaka in to Tsuji to provide a first and second corrector means for low pass filter output and enhance the output sound.

Consider claims 5 and 7. Tsuji teaches that the noise removal apparatus of the detection sensitivity of said noise detector (see fig.10 (20)) is changeable corresponding to the output level of said high band level detector (see detail disruption page 5 [0024]-[0030] and figs 8-12); and an audio output apparatus comprising said noise removal apparatus (see detail disruption page 5 [0024]-[0030] and fig. 10).

Consider claim 20, the method limitations as recited in the claim correspond to apparatus claim 5. See previous apparatus claim 5 rejection.

Consider claim 12. Tsuji teaches that the noise removal apparatus of a low pass filter (see fig.10 (13)) for extracting a low frequency component (14) of the demodulated audio signal, and wherein the generating period of the noise in the demodulated audio signal which is detected by said noise detection means (20) is corrected by holding the output signal from said low pass filter (13 and see detail disruption page 5 [0024]-[0030] and figs 8-12); but Tsuji does not clearly teach a selector includes a low pass filter for extracting a low frequency component of the demodulated signal.

However, Tanaka teaches a selector includes a low pass filter for extracting a low frequency component of the demodulated signal (see fig.3 46 and col. 4 line 55-col. 5 line 21 and discussion above claim 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Tanaka in to Tsuji to provide a first and second switch means for switching an input signal and an output signal in response to the high bank detection signal to improve the output sound.

Consider claim 14, Tanaka teaches that the method of configuring the correction signal includes: obtaining a first correction signal (see fig.3 45) that extends from the signal value in the demodulated signal that occurs prior to the detected period; obtaining a second correction signal (46) based on the plurality of signal values in the demodulated signal that occur prior to the detected period; selecting (47)one of the first and second correction signals (46, 45) based on whether the high band component level(42) satisfies the first or second criteria (such as L, H and see col. 4 line 55-col. 5 line 30).

Consider claim 15. Tsuji teaches that the method of further comprising:
determining the signal value in the demodulated signal that occurs prior to the detected period; determining a signal value in the demodulated signal that occurs subsequent to the detected period; obtaining the first correction signal by performing a linear interpolation of the signal values in the demodulated signal respectively occur prior to and subsequent to the detected period (see detail disruption page 5 [0024]-[0030] and figs 8-12).

Consider claims 16-17, Tsuji teaches that the of further comprising:
averaging the plurality of signal values in the demodulated signal that occur prior to the detection period to obtain a first average value, wherein the second correction signal extends from the first average value (see detail disruption page 5 [0024]-[0030] and figs 8-12); and averaging a plurality of signal values in the demodulated signals that occur subsequent to the detection period to obtain a second average value; and obtaining the second correction signal by performing a linear interpolation on the first and second average values (see detail disruption page 5 [0024]-[0030] and figs 8-12).

Consider claim 18. Tsuji teaches that low pass filtering (see fig. 10, 13) the plurality of signal values (such as, left and right channels) in the demodulated signal that occur before the detected period; and holding (12, delay) a signal level of the low pass filtering (13) to obtain the second correction signal (14. and see detail disruption page 5 [0024]-[0030]).

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9. Claims 4-5 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji (JP 11-186924) as modified by Tanaka (US PAT. 5,715,351) as applied to claim 1 above, and further in view of Nakamura (EP 477460).

Consider claim 4, Tsuji and Tanaka do not clearly teach that a level detector the whole band level in the demodulated audio signal, wherein said selector is operated according to a relationship between a ratio of the level output of said high band level detector to the level output of said level detector, and a predetermined value.

However, Nakamura teaches the noise removal apparatus according to further comprising:

a level detector (see fig.1, 5) the whole band level in the demodulated audio signal, wherein said selector is operated according to a relationship between a ratio of the level output of said high band level detector to the level output of said level detector, and a predetermined value (see col.2 line 47-col.3 line 25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Nakamura in to the teaching of Tsuji and Tanaka to provide a noise suppressing circuit in a FM tune having a gate for controlling a composite signal applied to a stereo demodulator of the FM tuner.

Consider claim 5 Nakamura teaches that the noise removal apparatus according the detection sensitivity of said noise detector (see fig.1, 9) is changeable corresponding to the output level of said high band level detector (5 and see col.2 line 47-col.3 line 25 and see discussion on claim 4).

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Consider claims 19-20, the method limitations as recited in the claims correspond to apparatus claims 4-5, thus note claims 4-5 respectively for rejection.

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji (JP 11-186924) as modified by Tanaka (US PAT. 5,715,351) and Nakamura (EP 477460) as applied to claims 1 and 20 above, and further in view of Matsumoto (US PAT. 5,630,217).

Consider claim 21, Tsuji, Tanaka and Nakamura do clearly teach the sensitivity of noise detection decreases as the high band component level increases.

However, Matsumoto teaches that the sensitivity of noise detection decreases as the high band component level increases (see figs 3a-3d and abstract and col.1 line 45-col. 2 line 39).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Matsumoto in to the teaching of Tsuji and Tanaka, Nakamura to provide a noise canceler having improved audibility and applied to a n FM tuner can be provided.

Response to Arguments

11. Applicant's arguments with respect to claims 1-5 and 6-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

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12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Aizawa (EP 0963086) is cited to show other related the noise reduction apparatus and audio output apparatus.

13. Any response to this action should be mailed to:

Mail Stop ____ (explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:

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401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (571) 272-7501. The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao,Lun-See L.S.
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501
Date 04-05-2006


VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600